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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,623	01/27/2004	Zvi Yaniv	12179-P100D1	1353

7590 05/03/2005  
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EXAMINER

SANTIAGO, MARICELI

ART UNIT PAPER NUMBER

2879

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/765,623

Applicant(s)

YANIV ET AL.

Examiner

Mariceli Santiago

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

The Amendment, filed on January 27, 2004, has been entered and acknowledged by the Examiner.

Cancellation of claims 13-18 has been entered.

Claims 1-12 are pending in the instant application.

### ***Specification***

The current status of all nonprovisional parent applications referenced should be included in the first sentence of the specifications. Reference to parent applications should recite "This is a divisional application of U.S. Patent Application No. 10/164,530, filed on June 6, 2002, now U.S. Patent No. 6,739,932, issued May 25, 2004."

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Park et al. (US 6,019,656).

Regarding claim 1, Park discloses an apparatus comprising a substrate (11) with holes embossed<sup>1</sup> therein, and carbon nanotubes (13) deposited in the holes (Fig. 1A-1C).

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<sup>1</sup> To raise in relief from a surface.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Imai et al. (US 6,653,366).

Regarding claim 1, Imai discloses an apparatus comprising a substrate (11) with holes (12) embossed therein, and carbon nanotubes (13) deposited in the holes (Fig. 3A).

Claims 1, 2 and 4-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (EP 1 061 555 A1).

Regarding claims 1, 2 and 4-6, Lee discloses an apparatus comprising a substrate (300) with holes embossed therein, and carbon nanotubes (500) deposited in the holes (Fig. 1), comprising a conductive layer (200) within the substrate electrically connecting at least a portion of the carbon nanotubes within a plurality of the holes, a material (400) for affixing the carbon nanotubes within the holes, an anode (800) positioned a distance from the substrate, having a phosphor (900) for emitting photons in response to bombardment from electrons emitted by the carbon nanotubes (Paragraph [0020]) and circuitry for causing the electrons to be emitted by the carbon nanotubes (Paragraph [0020]).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yaniv et al (US 6,312,303) in view of Lee et al. (EP 1 061 555 A1).

Regarding claims 3 and 7-12, Yaniv discloses a data processing system comprising a processor, a memory device, a storage device, an input device, a display device and a bus system for coupling the processor to the memory device, the storage device, the input device, and a display device. Yaniv discloses the suitability of using a nanotube-based field emission device as the display device component, however, fails to disclose the display device comprising a substrate with holes embossed therein, and carbon nanotubes deposited in the holes. Yaniv further discloses the field emission device comprising an anode positioned a distance from the substrate, having a phosphor for emitting photons in response to bombardment from electrons emitted by the carbon nanotubes, the optional implementation of gate electrodes (509) within the display device and circuitry for causing the electrons to be emitted by the carbon nanotubes. In the same field of endeavor, Lee discloses a display device comprising a substrate (300) with holes embossed therein, and carbon nanotubes (500) deposited in the holes (Fig. 1), comprising a conductive layer (200) within the substrate electrically connecting at least a portion of the carbon nanotubes within a plurality of the holes, a material (400) for affixing the carbon nanotubes within the holes, an anode (800) positioned a distance from the substrate, having a phosphor (900) for emitting photons in response to bombardment from electrons emitted by the carbon nanotubes (Paragraph [0020]) and circuitry for causing the electrons to be emitted by the carbon nanotubes (Paragraph [0020]). The nanotube's arrangement within the substrate provides for increase high-density nanotubes per unit area thus obtaining excellent luminous efficacy. Accordingly, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the

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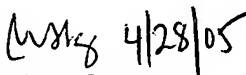
nanotube-based display device of Lee in the data processing system of Yaniv in order to provide a display device with increase high density nanotubes per unit area thus obtaining excellent luminous efficacy.

**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (571) 272-2464. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Mariceli Santiago  
Primary Examiner  
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